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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,544	09/24/2003	Kurt Wiesen	5123-550 (16420-02108)	5495

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EXAMINER
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WATKO, JULIE ANNE

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/670,544	<b>Applicant(s)</b> WIESEN ET AL.	
	<b>Examiner</b> Julie Anne Watko	<b>Art Unit</b> 2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 1-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/24/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/24/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of group II, claims 19-36 in the reply filed on February 6, 2006, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Objections***

2. Claims 32 and 36 are objected to because of the following informalities:

Claim 32 recites the limitation "a gap" in line 2. It is unclear whether this limitation refers to the "gap" of claim 31, line 2, or to an additional gap.

Claim 36 recites the limitation "a free layer" in lines 1-2. It is unclear whether this limitation refers to the "free layer" of claim 27, line 2, or to an additional free layer.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 19-21 and 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Fontana, Jr. et al (US Pat. No. 6680832 B2).

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As recited in independent claim 19, Fontana, Jr. et al show a read head (see Fig. 2), comprising: a GMR spin valve stack including at least a pinned layer 34, a free layer 38, and a stabilization layer 32 including patterned exchange bias material; and a pair of shields (10 and 13), one disposed on either side of the GMR spin valve stack, with one 13 of the shields being formed to include integral side shields (15 and 17) that substantially enclose the GMR spin valve stack between the pair of shields.

As recited in claim 20, Fontana, Jr. et al show that the GMR spin valve stack is configured to operate in a current perpendicular to plane (CPP) mode ("CPP", see col. 3, line 43).

As recited in claim 21, Fontana, Jr. et al show that the pair of shields are electrically conductive ("permalloy ... Sendust, NiFeCo, and Co based amorphous alloys", see col. 5, lines 5-10) and wherein the GMR spin valve stack includes an electrode 22 at the top thereof and an electrode 20 at the bottom thereof.

As recited in claim 24, Fontana, Jr. et al show a layer 14 of insulating material forming a gap between the pair of shields in the regions at either end of the GMR spin valve stack.

Regarding claim 25: The product by process limitations in these claims are directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessman*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process limitations or steps, which must be determined in a "product by process" claim, and

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not the patentability of the process limitations. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

As recited in claim 26, Fontana, Jr. et al show that the gap layer 14 includes a portion that covers at least portions of the sides of the stack (see Fig. 2).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 27-29 and 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fontana, Jr. et al (US Pat. No. 6680832 B2).

As recited in independent claim 27, Fontana, Jr. et al show a read head (see Fig. 2), comprising: a GMR spin valve stack including at least a pinned layer 34 and a free layer 38, a

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pair of shields (10 and 13), one disposed on either side of the GMR spin valve stack, with one 13 of the shields being formed to include integral side shields (15 and 17) that substantially enclose the GMR spin valve stack between the pair of shields.

As recited in independent claim 27, Fontana, Jr. et al are silent regarding an insulated layer of permanent magnet material disposed between the shields and abutting opposite ends of the GMR spin valve stack.

Official notice is taken of the fact that it was known in the art at the time the invention was made to provide an insulated layer of permanent magnet material disposed between two shields and abutting opposite ends of a GMR spin valve stack.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an insulated layer of permanent magnet material disposed between two shields and abutting opposite ends of a GMR spin valve stack of Fontana, Jr. et al as is notoriously well known in the art. The rationale is as follows: one of ordinary skill in the art would have been motivated to longitudinally bias the GMR spin valve stack so as to place the free layer into a single magnetic domain so as to reduce Barkhausen noise while preventing shunting of current as is notoriously well known in the art.

Regarding claim 28: See teaching above for claim 20.

Regarding claim 29: See teaching above for claim 21.

Regarding claim 32: See teaching above for claim 24.

Regarding claim 33: See teaching above for claim 24.

Regarding claim 34: See teaching above for claim 25.

Regarding claim 35: See teaching above for claim 26.

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As recited in claim 36, Fontana, Jr. et al show that the GMR spin valve stack includes a free layer 38 having opposed ends (see Fig. 2).

Regarding claim 36: Fontana, Jr. et al are silent regarding whether a layer of permanent magnet material abuts at least a portion of the ends of the free layer.

Official notice is taken of the fact that it was known in the art at the time the invention was made to abut ends of a free layer with permanent magnet.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to abut ends of the free layer of Fontana, Jr. et al with permanent magnet as is notoriously well known in the art. The rationale is as follows: one of ordinary skill in the art would have been motivated to ensure good magnetic coupling between the permanent magnet and the free layer, so as to ensure effective longitudinal biasing as is notoriously well known in the art.

8. Claim 22-23, and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fontana, Jr. et al (US Pat. No. 6680832 B2) in view of Childress et al (US PAP No. 2003/0214763 A1).

Regarding claims 22 and 30: Although Fontana, Jr. et al disclose CIP sensors (see col. 3, line 36), Fontana, Jr. et al are silent regarding whether the GMR spin valve stack between the shields is configured to operate in a current in plane (CIP) mode.

Childress et al teach that magnetic tunnel junction sensors and CIP or CPP spin valve sensors are generally interchangeable (see ¶ 0004; see also ¶ 0048).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the tunnel junction with a CIP spin valve as taught by Childress et al. The

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rationale is as follows: one of ordinary skill in the art would have been motivated to sense magnetic fields by spin-dependent scattering so as to reproduce stored data as is notoriously well known in the art.

As recited in claims 23 and 31, electrically conductive leads that are in a gap formed between the pair of shields are inherent to the CIP spin valve of Childress in the location between the shields of Fontana, Jr. et al. See rationale and motivation for combining teachings above.

### *Conclusion*

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597. The examiner can normally be reached on T11A-5P W3P-9P Th11:30A-10P F10A-8:30P SatNoon-8:30P.

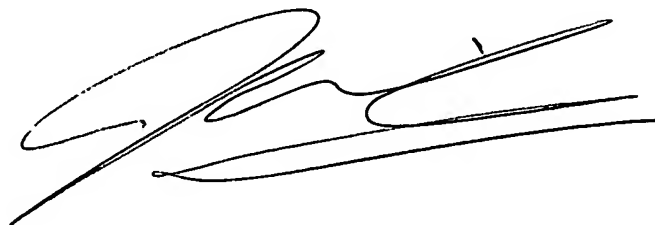


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on (571) 272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Julie Anne Watko  
Primary Examiner  
Art Unit 2653

February 25, 2006  
JAW

A handwritten signature in black ink, appearing to read 'JAW', with a stylized flourish extending from the end.